

REMARKS/ARGUMENTS

The Office Action mailed on January 12, 2005 has been received and its contents carefully considered. The specification has been amended for improved expression as provided in the attached substitute specification, which contains no new matter. In this regard, Applicants attach a substitute specification in which multiple occurrences of "charging" have been replaced with "charge."

Applicants have also canceled claims 1-3 and amended claims 4 and 5. Claims 4 and 5 remain pending in the application. For at least the following reasons, it is submitted that this application is in condition for allowance.

Claims 4 and 5 were tentatively rejected under 35 U.S.C. 102 (e) as allegedly anticipated by Kobayashi et al (US Patent 6,670,844). However, claim 4 has been amended for improved clarity, and it is submitted that amended claim 4 is patentable over Kobayashi for at least the following reasons.

Applicant's amended independent claim 1 recites:

Claim 4: A voltage regulating device for a charging charge pump, wherein the charging charge pump outputs an output voltage according to a first clock signal, a second clock signal, a third clock signal, and a fourth clock signal while the voltage regulating device comprises:

a first voltage regulating capacitor whose one terminal is coupled to an output terminal of the charging charge pump while the other terminal receives a first inverse clock signal, which is the complement of the first clock signal;

a second voltage regulating capacitor whose one terminal is coupled to the output terminal of the charging charge pump while the other terminal receives a second inverse clock signal, which is the complement of the second clock signal;

a third voltage regulating capacitor whose one terminal is coupled to the output terminal of the charging charge pump while the other terminal receives a third inverse clock signal, which is the complement of the third clock signal; and

a fourth voltage regulating capacitor whose one terminal is coupled to the output terminal of the charging charge pump while the other terminal receives a fourth inverse clock signal, which is the complement of the fourth clock signal.

(Emphasis added.)

In contrast, Kobayashi teaches:

In the charge pump 1, for example, nine N-channel transistors Tr0 to Tr8 are connected in series. The transistors Tr0 to Tr8 are, e.g., non-doped transistors. The transistor Tr0 on the first stage is provided for preventing backflow of a current and is diode-connected to power source, and a voltage for charge pump Vcp is supplied to the gate and source thereof. A voltage Vpp is outputted to an EEPROM from the drain of the transistor Tr8 on the final stage. Further, regarding capacitors C1 to C8, one terminal is respectively connected to nodes N1 to N8 each being provided between the adjacent transistors. The clock signals CLK1 to CLK8 are inputted to the other terminals of the capacitors C1 to C8. The capacitors C1 to C8 each have a capacity of, e.g., about 8 pF.

(see col. 5, lines 11-24)

In Kobayashi's, capacitors C5, C6, C7, and C8 are components of the charge pump 1, that is, C5-C8 belong to charge pump 1 and are not components outside the charge pump 1. In addition, capacitors C5, C6, C7, and C8 are separated by the adjacent transistors; they are not coupled to the same node, nor they are coupled to the output terminal of the charge pump 1. Therefore, Kobayashi's does not disclose the claimed "first voltage regulating capacitor whose one terminal is coupled to an output terminal of the charging charge pump", "a second voltage regulating capacitor whose one terminal is coupled to the output terminal of the charging charge pump", "a third voltage regulating capacitor whose one terminal is coupled to the output terminal of

the charging charge pump", or "a fourth voltage regulating capacitor whose one terminal is coupled to the output terminal of the charging charge pump", as recited in the

Applicants' amended claim 4.

Kobayashi furthermore recites:

Also, regarding the transistors Tr5 to Tr8, after a half period of the clock signal CLK0 since the clock signal CLK4 falls, the clock signal CLK5 rises. And then, the clock signals CLK5 to CLK8 are respectively produced by delaying the clock signals CLK1 to CLK4, so that the foregoing steps are carried out and a voltage Vpp is outputted from the drain of the transistor Tr8. The voltage Vpp is boosted from a voltage for charge pump Vcp."

(see col. 7, lines 36-44)

In Kobayashi's, "the clock signals CLK5 to CLK8 are respectively produced by delaying the clock signals CLK1 to CLK4", as shown in Kobayashi's Fig. 11.


Kobayashi does not disclose that "the other terminal (of the first voltage regulating capacitor) receives a first inverse clock signal, which is the complement of the first clock signal", "the other terminal (of the second voltage regulating capacitor) receives a second inverse clock signal, which is the complement of the second clock signal", "the other terminal (of the third voltage regulating capacitor) receives a third inverse clock signal, which is the complement of the third clock signal", and "the other terminal (of the fourth voltage regulating capacitor) receives a fourth inverse clock signal, which is the complement of the fourth clock signal", as recited in the applicant's amended claim 4. For at least the foregoing reasons, Applicant's amended claims 4 patently defines over the teachings of Kobayashi.

As such, it is submitted that Applicants' independent claim 4, as well as the claim 5 dependent therefrom, are patentable. It is submitted that the application is in condition for allowance.

If the Examiner believes that a further conference would be of value in expediting the prosecution of this application, the Examiner is hereby invited to telephone the undersigned counsel to arrange for such a conference.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 20-0778.

Respectfully submitted,

By: 
Daniel R. McClure
Registration No. 38,962

Thomas, Kayden, Horstemeyer & Risley, LLP
100 Galleria Pkwy, NW
Suite 1750
Atlanta, GA 30339
770-933-9500